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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/29/2004

Motohisa Ido

OHTN:020

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EXAMINER

CROUSE, BRETT ALAN

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

09/02/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,934	IDO ET AL.	
	Examiner	Art Unit	
	Brett A. Crouse	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13 and 14 is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20080801,20080131;20080131;20071203</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 16 June 2008, has been entered.
2. Applicant's This office action is in response to the amendment, filed 16 June 2008, which amends claims 1, 6 and 10, cancels claim 11, and adds new claims 12-14. Claims 1-10 and 12-14 are pending.

Response to Amendment

3. The rejection of:
claims 1-7, and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishida et al., EP 1,221,434;
is overcome by the amendment, filed 16 June 2008.

Specification

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the

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following is required: The specification fails to provide a basis for the claimed invention. No basis exists in the original disclosure for 9,9' di methyl or di ethyl fluorene linked via an anthracene group to a 2-naphthyl group.

5. Applicant in the remarks points to original claim 11. Claim 11 was added by the amendment filed 25 September 2007. The compounds of pages 23-25 provide a 2-naphthyl group only in conjunction with spirobifluorene.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 as amended adds a negative limitation to exclude 2-naphthyl when R¹ or R² are both methyl or ethyl. There is a lack of support for this amendment. As such the amendment is treated as new matter. Any negative limitation or exclusionary proviso must have basis in the original disclosure. See *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983) *aff'd mem.*, 738 F.d. 453 (Fed. Cir. 1984). The mere absence of a positive recitation is not basis for exclusion.

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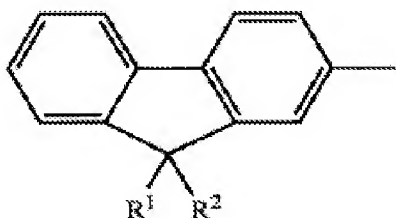
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8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-10, 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 adds



to the definition of Ar on page 2 of the claim. During the initial recitation no definition is given to R¹ or R². Additionally, in the subsequent proviso on page 4 of the claim in which R¹ and R² are defined and subsequent limitation of Ar to formula 3', the Ar' aryl group is not within the scope of the groups recited for Ar' in the preceding portion of the claim. It is unclear as to the meaning of the R groups and scope of Ar' when the substituted fluorene is present as Ar.

Additionally, within claim 1 both the fluorene group, as shown above, and the spirobifluorene group of formula (3') contain R¹ and R² in differing positions on the ring. One must select R¹ and R² of formula (3) specifically to arrive at formula (3').

Claim 12, similarly does not include a phenyl group of the scope of formula (4) in the basic definition of Ar' which is provided as three species. Claim 12 in the proviso allows Ar' to be a group of formula (4).

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-7, 9 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Xie, US 2003/0215667.

Xie teaches:

As to claims 1 and 2:

Paragraphs [0015]-[0024], formula (I), teach anthracene derivatives of formula (I) for use in electroluminescent devices. The passage additionally teaches that compounds of formula (I) exhibit a high charge mobility and can act as a host material for a dopant in the light emitting layer. Paragraph [0021], teaches R⁴ groups including hydrogen, alkyl, alkoxyl, aryl and heteroaryl. Paragraph [0022], teaches that R⁵ can be a substituted or unsubstituted aryl group having 6 to 40 carbon atoms. Paragraph [0023], teaches X can be a methylene, dialkyl methylene, and diaryl methylene.

Paragraph [0067], teaches representative examples of compounds of formula (I).

Attention is directed to compounds (Ia-3,4,7,8,34,36) in which R⁵ is a phenyl or naphthyl

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group. Attention is also directed to compound (Ia-36) which provides an example of R⁶ and R⁷ as butyl groups when R⁵ is naphthyl.

As to claims 3-7, 9 and 10:

Paragraphs [0044]-[0046], figures 1, 2, 3, teach various electroluminescent device structures. The passage additionally teaches that arylamines can be used as hole transport materials and that the hole transport layer can also act as a light emitting layer.

Paragraphs [0112]-[0119], teach the fabrication of the electroluminescent device having compounds of formula (I) in the light emitting layer. The light emitting layer can additionally include a dopant.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-7, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al., EP 1,221,434.

Ishida teaches:

Paragraphs [0006] - [0008], formulas (1) - (6), teach hydrocarbon compounds having an anthracene ring to which a fluorene is directly bound which are useful in an

electroluminescent device. The passage additionally teaches the R substituents upon the fluorene rings can be linear, branched, or cyclic alkyl groups.

Paragraphs [0009]-[0010], figures 1-8, teach various electroluminescent device structures.

Paragraphs [0014]-[0024], teach various substituents for compounds of formula (1).

With respect to the structure of compound (1) attention is directed to compounds A-20 and E-15 of paragraph [0048] which provide structures providing the claim limitation of Ar is a substituted fluorene that (ii) of claim 1 in which the anthracene is substituted is satisfied, R1 and R2 of fluorene are methyl and ethyl, and naphthyl substituents to anthracene. Ishida as noted in paragraphs [0014]-[0024] teaches equivalents to the substituents presented.

Paragraphs [0022]-[0024] teach the substituent to the anthracene ring can include naphthyl groups. The passage further teaches that groups listed as specific examples for X1 and X2 are suitable as substituents to the anthracene and fluorene groups. For example, suitable groups include naphthyl, n-pentyl, n-octyl, n-decyl, and n-octadecyl.

Paragraph [0068], teaches that compounds of formula (1) can be used as a hole injection transport component, luminescent component, or electron transport compound of an electroluminescent device. Preferably, the compounds of formula (1) are used as hole injection transport components or luminescent components. Most preferably, the compounds of formula (1) are used as luminescent components.

Paragraph [0082], teaches the hole injection transport layer can be formed from a compound of formula (1) in combination with triarylamine or stilbene derivatives.

Paragraph [0087], teaches that compounds of formula (1) in combination with triarylamine derivatives can be used as the luminescent layer.

Paragraph [0089], teaches that compounds of formula (1) can be use singly or in combination with other luminescent compounds in the luminescent layer.

Paragraph [0090], teaches that when compounds of formula (1) are used in combination with other luminescent compounds a compound of formula can be present in the range of 0.001 to 99.999 weight percent of the combination.

Paragraph [0092], teaches that compounds of formula (1) can be used as host materials in the luminescent layer of an electroluminescent device.

Paragraph [0093], teaches that compounds of formula (1) can be used as host materials with triarylamine derivatives as the guest material in the luminescent layer of an electroluminescent device.

Ishida does not teach:

Ishida does not provide within a single example the fluorene group having non-methyl or ethyl substituents for R1 and R2 while simultaneously providing a substituted anthracene group and Ar' as recited by the current limitations.

It would have been obvious to one of ordinary skill in the art to provide a substituted fluorene, bonded to anthracene(s) which is further bonded to a condensed cyclic group such as naphthyl and the recited equivalents of Ishida with the expectation that the resulting compound would function suitably in the device of Ishida as suggested by Ishida.

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14. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al., EP 1,221,434 hereinafter known as Ishida as applied to claims 1-7 and 9-11 above, and further in view of Hosokawa et al., EP 1,167,488 hereinafter known as Hosokawa.

The teachings of Ishida as in the rejection above are relied upon.

Ishida does not teach:

Ishida does not recite styrylamine derivatives as a component of the light emitting layer.

However, Ishida teaches arylamine derivatives as a component of the light emitting layer.

Ishida additionally teaches stilbene derivatives as hole transport materials in addition to arylamines.

Hosokawa teaches:

Paragraphs [0008]-[0009], teach an organic light-emitting medium for an electroluminescent device comprising a styryl derivative and an anthracene derivative.

Paragraph [0016], formula (III), teaches styryl amine derivatives. Attention is directed to pages 28 and 29 of the specification, formulas (A) and (B), opposite formula (III) of Hosokawa.

Paragraph [0037], provides examples of styryl amine derivatives. Compounds EM32-EM61 meet the limitations of an arylamine and a styrylamine as required by claims 7 and 8 as their respective structures contain a nitrogen bonded to three aromatic (aryl) groups as required in the styryl- and aryl- amine definitions (A) and (B), see pages 28 and 29 of the specification. Attention is directed to compounds EM32, EM36, EM39, and EM51 as compounds used in examples as referenced below.

It would have been obvious to one of ordinary skill in the art to use a styrylamine of Hosokawa in combination with an anthracene derivative in the light emitting layer of the electroluminescent device of Ishida in combination with an anthracene derivative of Ishida as taught by Hosokawa and suggested as suitable by Ishida. The styrylamines of Hosokawa are a subset of arylamines and Ishida teaches arylamines and suggests the phenyl ring and double bond styryl structure in the suitability of stilbene derivatives for use as hole transport materials in conjunction with or in place of arylamines. One of ordinary skill in the art would expect to obtain suitable and predictable results by the inclusion of the styrylamines of Hosokawa in the light emitting layer of Ishida.

Allowable Subject Matter

15. Claims 13 and 14 are allowed.
16. The following is a statement of reasons for the indication of allowable subject matter:
As to claim 13:
The prior art does not teach or suggest the combination of anthracene with the hydrogenated fused ring structures having a phenanthrene and pyrene skeletons. The prior art teaches only the fully aromatic skeletons and does not suggest the non-conjugated framework of the current groups. The prior art also does not suggest the spirobifluorene, spirohexanfluorene or spiroindanefluorene derivatives bonded directly to an anthracene group as a linking group to the specified cyclic groups.
As to claim 14:

The prior art does not teach or suggest the compound spiro silicon containing groups of the claim linked by an anthracene group.

Response to Arguments

17. Applicant's arguments have been fully considered but they are not persuasive.

With respect to the rejection over Xie applicants argue that Xie does not teach or suggest the compounds of claim 1 as amended of the instant invention.

The examiner respectfully disagrees. Xie teaches as compound Ia-36 a compound in which with respect to formula (Ia) of the instant claims R1, R2 are butyl, X is tert-butyl (a or b = 1) and Ar' is 2-naphthyl. This meets the limitations of claim 1 of the instant invention.

With respect to the rejection over Ishida applicants argue that Ishida does not anticipate the compounds of claim 1 as amended of the instant invention. The rejection under 35 USC 102(b) has been withdrawn and the reference reapplied under 35 USC 103(a).

The compounds of A20, which is a preferred compound, attention is directed to paragraph [0049], and E15 are cited in the new rejection. It is noted that the example compounds possess methyl substituents for R1 and R2 of the fluorene group with respect to formula (Ia) of the instant claims. However, Ishida teaches more broadly alkyl substituents beyond methyl and ethyl at these positions both as example compounds and recited groups and as such the reference is applied under 35 USC 103(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is (571)-272-6494. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton I. Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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1794

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